**WEEK 5 EXPERIMENT**

**5. AIM: Consider any application, using COCOMO model, estimate the effort.**

In COCOMO, projects are categorized into three types:

**1. Organic**

**2. Semidetached**

**3. Embedded**

1.Organic: A development project can be treated of the organic type, if the project deals with developing a well-understood application program, the size of the development team is reasonably small, and the team members are experienced in developing similar methods of projects. Examples of this type of projects are simple business systems, simple inventory management systems, and data processing systems.

2. Semidetached: A development project can be treated with semidetached type if the development consists of a mixture of experienced and inexperienced staff. Team members may have finite experience in related systems but may be unfamiliar with some aspects of the order being developed. Example of Semidetached system includes developing a new operating system (OS), a Database Management System (DBMS), and complex inventory management system.

3. Embedded: A development project is treated to be of an embedded type, if the software being developed is strongly coupled to complex hardware, or if the stringent regulations on the operational method exist. For Example: ATM, Air Traffic control.

For three product categories, a different set of expression is provided to predict effort (in a unit of person month)and development time from the size of estimation in KLOC(Kilo Line of code) efforts estimation takes into account the productivity loss due to holidays, weekly off, coffee breaks, etc.

**Effort**: a \* (Size)b person-month

**Time for development**: 2.5 \* (Effort)c month

The value of the constants a, b, c are given below:

| **Software project** | ***a*** | ***b*** | ***c*** |
| --- | --- | --- | --- |
| Organic | 2.4 | 1.05 | 0.38 |
| Semi-detached | 3.0 | 1.12 | 0.35 |
| Embedded | 3.6 | 1.20 | 0.32 |

Application of COCOMO Model:

The Institute has a IT management team of its own. This team has been given the task to execute the Library Information System project. The team consists of a few experts from industry, and a batch of highly qualified engineers experienced with design and implementation of information systems. It is planned that the current project will be undertaken by a small team consisting of one expert and few engineers. Actual team composition would be determined in a later stage.

Using COCOMO and based on the team size (small) and experience (high), the concerned project could be categorized as "organic". The experts, based on their prior experience, suggested that the project size could roughly be around 10 KLOC. This would serve as the basis for estimation of different project parameters using basic COCOMO, as shown below:

Effort = a \* (KLOC)b PM

Tdev = 2.5 \* (Effort)c Months

For organic category of project the values of a, b, c are 2.4, 1.05, 0.38 respectively. So, the projected effort required for this project becomes

Effort = 2.4 \* (10)1.05 PM

= 27 PM (approx)

So, around 27 person-months are required to complete this project. With this calculated value for effort we can also approximate the development time required:

Tdev = 2.5 \* (27)0.38 Months

= 8.7 Months (approx)

So, the project is supposed to be complete by nine months.